AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for temporal inversion of a wave corresponding to at least one initial signal s(t), where t is the time, this initial signal s(t) exhibiting a certain central frequency f0 and a passband Δf, in which method a temporal inversion signal α.s(-t), where α is a multiplicative coefficient and s(-t) is the temporal inversion of s(t), is determined, ~~said method being implemented by a device for transmitting and receiving waves, and~~ comprising:

providing a first transformation that is applied to the initial signal s(t) for lowering the central frequency of the initial signal and for substantially not causing any loss of information with respect to the initial signal ~~is applied to the initial signal s(t)~~, said first transformation producing a first set of transformed signals Ki(t) comprising at least one first transformed signal Ki(t) of lower central frequency than the initial signal, said first set of transformed signals Ki(t) being representative of said initial signal s(t),

providing a second transformation ~~producing~~ that is applied to each first transformed signal Ki(t) to produce a second transformed signal K'i(t) substantially of the same central frequency as the first transformed signal Ki(t) ~~is applied to each first transformed signal Ki(t)~~, said second transformation thus producing a second set of transformed signals K'i(t) from the first set of transformed signals Ki(t), said second transformation being chosen so that said second set of transformed signals K'i(t) is representative of the temporal inversion signal s(-t), and

providing a third transformation that is applied to the second set of transformed signals K'i(t) which generates the temporal inversion signal α.s(-t) ~~is applied to the second set of transformed signals K'i(t)~~.

wherein said steps of providing a first transformation, providing a second transformation and providing a third transformation are implemented by a device for transmitting and receiving waves.

2. (Previously Presented) The method as claimed in claim 1, wherein the passband Δf is less than f0.

3. (Previously Presented) The method as claimed in claim 1, wherein the third transformation is a transformation inverse to the first transformation.

4. (Previously Presented) The method as claimed in claim 3, wherein the first transformation is a demodulation for eliminating a carrier signal of frequency f0 so as to extract said first set of transformed signals Ki(t) from the initial signal s(t), and the third transformation is a modulation of a carrier signal of frequency f0 by the signal or signals K'i(t).

5. (Previously Presented) The method as claimed in claim 4, wherein the first transformation is an IQ demodulation producing two first transformed signals K1(t)=I(t) and K2(t)=Q(t) such that $s(t) = I(t)\cos(2\pi.f0.t) + Q(t)\sin(2\pi.f0.t)$, the second transformation transforms the signal K1(t) into K'1(t)=I(-t) and the signal K2(t) into K'2(t)=-Q(-t), and the third transformation is an IQ modulation inverse to said demodulation.

6. (Previously Presented) The method as claimed in claim 4, wherein the first transformation is an amplitude and phase demodulation producing two first transformed signals K1(t)=A(t), and K2(t)=φ(t), where A(t) is the amplitude of the signal s(t) and φ(t) the

phase of the signal s(t), the second transformation transforms the signal K1(t) to K'1(t)=A(-t) and the signal K2(t) to K'2(t)=-φ(-t), and the third transformation is a modulation inverse to said demodulation, producing the temporal inversion signal $s(-t)=A(-t)\cos[2\pi.f0.t-\varphi(-t)]$.

7. (Previously Presented) The method as claimed in claim 1, wherein the first transformation is a subsampling, with a sampling frequency of less than 2f0 but at least equal to 2Δf, producing a single transformed signal K1(t), the second transformation is a temporal inversion transforming the signal K1(t) to K'1(t)=K1(-t), and the third transformation is a filtering of passband substantially equal to Δf and centered on f0, transforming K'1(t) into s(-t).

8. (Previously Presented) The method as claimed in claim 1, wherein the first transformation is a downward frequency shift, into intermediate band, producing a single first transformed signal K1(t), the second transformation is a temporal inversion transforming the signal K1(t) into K'1(t)=K1(-t), and the third transformation is an upward frequency shift, the inverse of said downward frequency shift.

9. (Previously Presented) The method as claimed in claim 1, wherein the first and third transformations are carried out on analog signals, each first transformed signal undergoes a sampling and the second transformation is carried out digitally before converting each second transformed signal into an analog signal.

10. (Previously Presented) The method as claimed in claim 9, wherein the sampling is carried out at a sampling frequency of below f0.

11. (Previously Presented) The method as claimed in claim 1, wherein the wave is electromagnetic.

12. (Previously Presented) The method as claimed in claim 11, wherein the central frequency f0 is between 0.7 and 50 GHz.

13. (Previously Presented) The method as claimed in claim 12, wherein the central frequency f0 is between 0.7 and 10 GHz.

14. (Previously Presented) The method as claimed in claim 1, wherein the wave is chosen from among acoustic waves and elastic waves.